Evidence Ecosystem concept and advances in evidence synthesis and dissemination

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Chief Information Officer
Cochrane Central Executive
I have no actual or potential conflict of interest in relation to this presentation.

I am an employee of Cochrane.
This talk will show …

…how explicit links between actors are needed – and are now possible - to close the loop between new evidence and improved care

...through a culture for sharing evidence combined with advances in methods and technology platforms

…for digitally structured data in a trustworthy "Evidence Ecosystem".
Outline

• Evidence Ecosystem concept
• Cochrane and innovations in evidence synthesis
• Examples of Ecosystem
• Summary
Ecosystem: African Savanna

African Savanna Ecosystem Illustration Key

The following organisms and environmental features are depicted in the African Savanna Community Illustration.

1. Grass: producer
2. Jackalberry tree: producer
3. Acacia tree: producer
4. Warthog: primary consumer (herbivore)
5. Cattle (domestic); primary consumer
6. Zebra: primary consumer
7. Impala: primary consumer
8. Elephant: primary consumer
9. Giraffe: primary consumer
10. Hyena: secondary consumer (carnivore); scavenger
11. Leopard: secondary consumer (carnivore)
12. Lion; secondary consumer (carnivore)
13. Human (Masai tribesman): omnivore
14. Aardvark: omnivore
15. Red-billed oxpecker: insectivore
16. Termite and termite mound: decomposer/detritivore
17. Bacteria: decomposer/detritivore
18. Fungi: decomposer/detritivore
19. White-backed vulture: scavenger
20. Rocks: environmental feature
21. Stream or pond: environmental feature
Ecosystem: African Savanna

Healthy, well-balanced ecosystems are made up of multiple, interacting food chains, called food webs. Carnivores (lions, hyenas, leopards) feed on herbivores (impalas, warthogs, cattle) that consume producers (grasses, plant matter). Scavengers (hyenas, vultures) and decomposers/decomposers (bacteria, fungi, termites) break down organic matter, making it available to producers and completing the food cycle (web). Humans are part of the savanna community and often compete with other organisms for food and space.

The following list defines and provides examples of the feeding (trophic) levels that comprise food webs:

- **Producer**: organism on the food chain that can produce its own energy and nutrients. Examples: grasses, Jackalberry tree, Acacia tree
- **Primary consumer/herbivore**: organism that eats mainly plants. Examples: cows, impalas, warthogs, zebras
- **Secondary consumer/carnivore**: organism that eats meat. Examples: leopard, lion
- **Omnivore**: organism that eats a variety of organisms, including plants, animals, and fungi. Examples: humans, aardvarks
- **Decomposer/detritivores**: organisms that break down dead plant and animal material and waste and release it as energy and nutrients in the ecosystem. Examples: bacteria, fungi, termites
- **Scavenger**: animal that eats dead or rotting animal flesh. Examples: vultures, hyenas
- **Insectivore**: organism that mostly eats insects. Example: Red-billed oxpecker
The Digital and Trustworthy Evidence Ecosystem

To increase value and reduce waste in research
Currently poor functioning evidence ecosystem with challenges at every step

Evidence synthesizers

- Systematic reviews often irrelevant, incomplete and takes too long to produce and update, with lots of duplication

Evidence disseminators to clinicians

- Guidelines are often outdated, costly, inefficiently disseminated in suboptimal presentation formats

Evidence disseminators to patients

- Evidence dissemination to patients is limited, hard to share decisions with clinicians

Evidence implementers

- May not target most important gaps and fail to identify and use best current evidence, lack tools (e.g. CDS in EHR)

Evidence evaluators & improvers

- Data from registries etc of poor quality, unstructured and remain unpublished

Evidence producers

- Research evidence often unreliable, off target. Big data exciting but do they add value?

Actors in the ecosystem

- Evidence implementation, evaluation and quality improvement lacks coordination, a hit-or-miss process

Overall:
No support or easy access to people, methods and tools in the ecosystem
The Digital and Trustworthy Evidence Ecosystem

**Synthesize evidence**
- Relevant, structured and living systematic reviews

**Produce evidence**
- More relevant and higher quality primary research, real world evidence and big data

**Evaluate and improve practice**
- Recording real world evidence in structured EHRs and registries, linked to evidence production

**Disseminate evidence and recommendations to clinicians**
- Trustworthy, well disseminated and living clinical practice guidelines

**Disseminate evidence to patients**
- Trustworthy evidence for shared and personalized decisions, in living decision aids, linked to living guidelines

**Implement evidence**
- Trustworthy evidence and guidelines for CDS in EHRs and quality improvement initiatives, linked to evaluation of care and production of new evidence

**Tools and platforms**

**Digitally structured data**

**Trustworthy evidence**

**Common understanding of methods**

**Culture for sharing**
Evidence disseminators to clinicians

Evidence disseminators to patients

Evidence implementers

Evidence evaluators & improvers

Evidence synthesizers

Actors and flow of data

Trustworthy and Digital Evidence Ecosystem with solutions

Analyze data, write and publish systematic reviews

More relevant and higher quality primary research and big data

Plan, conduct and publish primary research (trials and observational studies)

EHR, Registries, Quality Indicators, Shared Decisions

Tools to analyze data, write and publish trustworthy guidelines

Decision Aids for the clinical encounter

Personalized Decision Support Systems in the EHR linked to patient specific data

Overall: Support and easy access to people, methods and tools in the ecosystem
The emerging "ecosystem" within Cochrane

How Cochrane is contributing to the larger ecosystem
Issues in Evidence synthesis

- Processes manual, duplication of effort, lengthy
- Human and machine effort not efficient
- Tools not yet fit for purpose and connected
- Lack of data provenance impedes re-use
- Outputs not optimised for use and impact

Bottom line: new approaches to gathering, synthesizing, and disseminating evidence are needed.
Project Transform

4 components:

- **Evidence Pipeline**: uses machine learning and text mining to make study identification more efficient and semi-automated – including Centralized Search Service

- **Cochrane Crowd**: uses crowdsourcing to get more people involved in tasks (crowd.cochrane.org)

- **Task Exchange**: Platform for brokering tasks (taskexchange.cochrane.org)

- **Living Systematic Reviews Network**: New models of updating and maintaining systematic reviews

- More info at [cochrane.org/transform]
The Problem – Data deluge
The CSS is about increasing the number of sources searched in the way that Embase is searched.

Candidate sources: ClinicalTrials.gov, CINAHL, LILACS, and Korea Med, and more in the future.

The CSS in close partnership with Project Transform’s Pipeline and Crowd components.
Cochrane Evidence Pipeline
Finding and classifying relevant research

Routine searches for specialised registers
Individual searches for reviews
Centralised search service

What are the PICO characteristics of this trial? A probability is assigned
Which Review Group does this belong to? A probability is assigned
What is the study design? eg RCT, DTA...

Verify Classify Use

Enriched Dataset

Cochrane Crowd

http://community.cochrane.org/tools/project-coordination-and-support/transform
You can make a difference

Become a Cochrane citizen scientist. Anyone can join our collaborative volunteer effort to help categorise and summarise healthcare evidence so that we can make better healthcare decisions.

Give it a try

6046 Contributors
118 Countries
1314816 Classifications

Just 60 seconds a day can make a difference.
Welcome, Chris.

RCT identification for Cochrane review CD008552
Interventions to increase fruit and vegetable consumption in children aged five years and under

Can you help us identify the randomised trials?
This task is for a specific Cochrane Review. It’s for a very new type of Cochrane Review called a Living Systematic Review (oooh, exciting, I hear you say!).

If you screen 250 or more records, you will be acknowledged in the review. Read the task FAQs to find out more.

7246 Classifications made 381 RCTs found 0 My assessments

working on this task right now

Start screening History and settings Training records FAQ Quick reference
Who should undergo a colonoscopy among patients with incidental colon uptake on PET-CT?

OBJECTIVES: To investigate the optimal cut-off of the maximum standard uptake value (SUVmax) for the detection of colorectal neoplasms and to suggest those for whom further colonoscopy is recommended among patients with incidental colonic uptake on positron emission tomography-computed tomography (PET-CT). MATERIALS AND METHODS: In 306 patients who underwent colonoscopy within 3 months of receiving PET-CT between January and December 2009, measurements of the per-patient and per-lesion diagnostic performance of PET-CT for the detection of colonic neoplasms were obtained. Receiver operating characteristic (ROC) analysis was used to identify the SUVmax that provided a high probability of diagnosing malignancy and high-grade dysplasia. RESULTS: The per-patient and per-lesion PET-CT detection sensitivities for malignancies were 93.3% (28/30; 95% confidence interval (CI) 76.5% to 98.9%) and 93.5% (29/31, 95% CI 77.2% to 98.9%), respectively; the sensitivities for high-grade dysplasia were both 90.0% (9/10; 95% CI 54.1% to 99.5%). As a criterion to specifically detect both malignancy and high-grade dysplasia on focal uptake, a SUVmax greater than 2.5 yielded a 92.3% per-lesion sensitivity and a 42.9% per-lesion positive predictive value (PPV). In the ROC curve analysis, a cut-off value of SUVmax = 5.8 was established, at which the sensitivity, PPV and positive likelihood ratio for diagnosing malignancy and high-grade dysplasia were 71.8% (28/39; 95% CI 54.9% to 84.5%), 84.8% (28/33; 95% CI 67.3% to 94.3%) and 5.9, respectively. CONCLUSION: The optimal cut-off value to identify a malignancy or high-grade dysplasia was SUVmax = 5.8. However, to avoid missing a malignancy or high-grade dysplasia, a colonoscopy should be performed above a SUVmax = 2.5.
Early inhaled steroid use in extremely low birthweight infants: A randomised controlled trial. [201631]

Objective We hypothesised that a prophylactic inhaled steroid would prevent the progression of bronchopulmonary dysplasia (BPD) in extremely low birthweight infants (ELBWIs). Design This study was a multicentre, randomised, double-blinded, placebo-controlled trial. Setting This investigation was conducted in 12 level III neonatal intensive care units (NICUs). Patients A total of 211 ELBWIs requiring ventilator support were enrolled. Intervention Starting within 24 h of birth and continuing until 6 weeks of age or extubation, two doses of 50 μg fluticasone propionate (FP) or placebo were administered every 24 h. Main outcome measurement The primary outcome measure used to indicate the morbidity of severe BPD incidence was death or oxygen dependence at discharge from the NICU. The secondary measures were neurodevelopmental impairments (NDIs) at 18 months of postmenstrual age and 3 years of age. We performed subgroup analyses based on gestational week (GW) and the presence of chorioamnionitis (CAM). Results Infants were randomised into the FP (n=107) or placebo (n=104) groups. No significant differences were detected between the FP and placebo groups with respect to either the frequency of death or the oxygen dependence at discharge or NDIs. In subgroup analyses, the frequencies of death and oxygen dependence at discharge were significantly decreased in the FP group for infants born at 24-26 GWs and for infants with CAM, regardless of the GW at birth. Conclusions Inhaled steroids have no effect on the prevention of severe BPD or long-term NDI but might decrease the severity of BPD for ELBWIs with a risk factor. Trial registration number UMIN-CTR C000000405. Copyright © 2016 BMJ Publishing Group Ltd & Royal College of Paediatrics and Child Health.
A bigger team than you think

Connect with the global health evidence community to get your work done more quickly

Post a task
Contribute skills

Cochrane TaskExchange now partnering with Guidelines International Network to grow and strengthen the global health evidence community

What is TaskExchange?

TaskExchange connects people working in health evidence with people who have the time and skills to help.
Cancer

Checking if a Chinese Language article is a single arm study

Skills: Data Extraction

Please can someone with good Chinese help me to check if this is a single arm or RCT study? The paper is: Xia, Y; Lu, X; Du, R;
First two Living SRs published

Delayed antibiotic prescriptions for respiratory infections

Geoffrey KP Spurling, Chris B Del Mar, Liz Dooley, Ruth Foxlee, Rebecca Farl
First published: 7 September 2017
Editorial Group: Cochrane Acute Respiratory Infections Group
DOI: 10.1002/14651858.CD004417.pub5

Parenteral anticoagulation in ambulatory patients with cancer

Elie A Akl, Lara A Kahale, Rami A Ballout, Maddalena Barba, Victor E D Yosuico, Frederiek F van Doormaal, Saskia Middeldorp, Andrew Bryant, Holger Schünemann
First published: 10 December 2014
Editorial Group: Cochrane Gynaecological, Neuro-oncology and Orphan Cancer Group
DOI: 10.1002/14651858.CD006652.pub4
Living systematic reviews: 2. Combining human and machine effort

James Thomas, Anna Noel-Storr, Iain Marshall, Byron Wallace, Steven McDonald, Chris Mavergones, Paul Glasziou, Ian Shemilt, Anneliese Symon, Tari Turner, Julian Elliott

Abstract

New approaches to evidence synthesis, which use human effort and machine automation in mutually reinforcing ways, can enhance the feasibility and sustainability of living systematic reviews. Human effort is a scarce and valuable resource, required when automation is impossible or undesirable, and includes contributions from online communities ("crowds") as well as more conventional
New Cochrane Review Ecosystem

Linked Data

1. Develop question
2. Plan methods
3. Write protocol
4. Develop search
5. Run search
6. Select studies
7. Collect data
8. Assess risk of bias
9. Analyze data
10. Interpret findings
11. Write & publish review

COMMUNITIES
PROCESS
APPLICATIONS
DATA STORES

Cochrane Review Groups
Comms support
Edit support

ARCHIVE
CRS Web
GRADE Pro GDT
MAGIC app
EPPI Reviewer

Evidence Pipeline
Covidence

linked data
Linked Data tools
PICO annotation

Population/participants

Intervention

Comparator(s)

Outcomes
Controlled terminology sets (vocabularies)

The Anatomical Therapeutic Chemical Classification System with Defined Daily Doses (ATC/DDD)

Purpose/Definition
The ATC/DDD system classifies therapeutic drugs. The purpose of the ATC/DDD system is to serve as a tool for drug utilization research in order to improve quality of drug use.

Classification structure
In the ATC classification system, the drugs are divided into different groups according to the organ or system on which they act and their chemical, pharmacological and therapeutic properties. Drugs are classified into five different levels. Drug consumption statistics (international and other levels) can be presented for each of these five levels.
<table>
<thead>
<tr>
<th>Study Country</th>
<th>Allocation Concealment</th>
<th>Sample Size</th>
<th>Intervention</th>
<th>Comparison</th>
<th>Outcome Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina 1985</td>
<td>Not stated</td>
<td>60</td>
<td>Enalapril</td>
<td>Methyldopa</td>
<td>BP (mean)</td>
</tr>
<tr>
<td>Argentina 1987</td>
<td>Not stated</td>
<td>20</td>
<td>Ketanserin</td>
<td>Methyldopa</td>
<td>BP (mean)</td>
</tr>
<tr>
<td>Argentina 1989</td>
<td>Not stated</td>
<td>28</td>
<td>Mepindolol</td>
<td>Methyldopa</td>
<td>BP (mean)</td>
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<tr>
<td>Australia 1993</td>
<td>Not stated</td>
<td>28</td>
<td>Propranolol</td>
<td>Methyldopa</td>
<td>BP (mean)</td>
</tr>
<tr>
<td>Australia 1985</td>
<td>Not stated</td>
<td>183</td>
<td>Reserpine</td>
<td>Methyldopa</td>
<td>BP (mean)</td>
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<tr>
<td>Australia 2001</td>
<td>Not stated</td>
<td>16</td>
<td>Thienopyridine</td>
<td>Methyldopa</td>
<td>BP (mean)</td>
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<tr>
<td>Brazil 1985</td>
<td>Not stated</td>
<td>100</td>
<td>Pindolol</td>
<td>No treatment</td>
<td>BP (mean)</td>
</tr>
</tbody>
</table>
Multi-arm trials – Complex PICO

Baseline characteristics

<table>
<thead>
<tr>
<th>NCT01172821</th>
<th>Baseline characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study design:</td>
<td>RCT</td>
</tr>
<tr>
<td>Study grouping:</td>
<td>parallel group</td>
</tr>
<tr>
<td>Open label:</td>
<td>no</td>
</tr>
<tr>
<td>Cluster RCT:</td>
<td>no</td>
</tr>
<tr>
<td>LAMA add-on (low)</td>
<td></td>
</tr>
<tr>
<td>Number randomised:</td>
<td>257</td>
</tr>
<tr>
<td>Number completed:</td>
<td>245</td>
</tr>
<tr>
<td>Mean age (SD):</td>
<td>43.0 (12.8) years</td>
</tr>
<tr>
<td>% Male:</td>
<td>37.1</td>
</tr>
<tr>
<td>% Predicted FEV1:</td>
<td>NR</td>
</tr>
<tr>
<td>% White:</td>
<td>NR</td>
</tr>
<tr>
<td>Duration of asthma:</td>
<td>NR</td>
</tr>
<tr>
<td>LABA add-on</td>
<td></td>
</tr>
<tr>
<td>Number randomised:</td>
<td>266</td>
</tr>
<tr>
<td>Number completed:</td>
<td>249</td>
</tr>
<tr>
<td>Mean age (SD):</td>
<td>43.5 (13.3) years</td>
</tr>
<tr>
<td>% Male:</td>
<td>42.5</td>
</tr>
<tr>
<td>% Predicted FEV1:</td>
<td>NR</td>
</tr>
<tr>
<td>% White:</td>
<td>NR</td>
</tr>
<tr>
<td>Duration of asthma:</td>
<td>NR</td>
</tr>
<tr>
<td>LAMA add-on (high)</td>
<td></td>
</tr>
<tr>
<td>Number randomised:</td>
<td>253</td>
</tr>
<tr>
<td>Number completed:</td>
<td>240</td>
</tr>
<tr>
<td>Mean age (SD):</td>
<td>44.3 (12.7) years</td>
</tr>
<tr>
<td>% Male:</td>
<td>42.3</td>
</tr>
<tr>
<td>% Predicted FEV1:</td>
<td>NR</td>
</tr>
<tr>
<td>% White:</td>
<td>NR</td>
</tr>
<tr>
<td>Duration of asthma:</td>
<td>NR</td>
</tr>
</tbody>
</table>

Inclusion criteria: Informed consent; men or women aged 18-75 years; &gt;= 3 months' asthma at enrollment; diagnosed before 40.5 years, confirmed with FEV1, decrease of &gt;= 12% and &gt;= 200 mL after salbutamol; on maintenance treatment with a medium, stable dose of ICS for &gt;= 4 weeks; ACC (e.1.5 prior to randomisation; pre-Bronchodilator FEV1, 50-90% of predicted normal at screening; variation of absolute FEV1 of screening (pre-bronchodilator) as compared with visit 2 (pre-dose) must be within &gt;= 30%; non-smoker for &gt;= 1 year, and history &lt; 10 pack-years; able to use inhalers and perform trial procedures correctly.

Exclusion criteria: Lung disease or significant medical illness other than asthma; clinically relevant abnormal screening, haematology or blood chemistry; hospitalised for cardiac failure during the past year; any unstable or life-threatening cardiac arrhythmia; known active TB; resection, radiotherapy or chemotherapy within 5 years for malignancy (except basal cell carcinoma allowed); thoracotomy with pulmonary resection; significant alcohol or drug abuse within 2 years; current or recent (6 weeks) pulmonary rehabilitation; known hypersensitivity to the study drugs or any other components of the delivery systems; symptom or patient report of children potential not using effective contraception; injectional drug history.

Intervention characteristics

<table>
<thead>
<tr>
<th>LAMA add-on (low)</th>
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</thead>
<tbody>
<tr>
<td>ICS type/dose: maintenance treatment with a medium, stable dose of ICS</td>
</tr>
<tr>
<td>Add-on type/dose: tiotropium Respimat 2.5 mcg once daily</td>
</tr>
<tr>
<td>Co-medications: LABAs, other anticholinergics, cromone, methyloxanthines and anti-IgE were not permitted.</td>
</tr>
<tr>
<td>Duration of treatment: 24 weeks</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LABA add-on</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICS type/dose: maintenance treatment with a medium, stable dose of ICS</td>
</tr>
<tr>
<td>Add-on type/dose: salmeterol 50 mcg twice daily</td>
</tr>
<tr>
<td>Co-medications: LABAs, other anticholinergics, cromone, methyloxanthines and anti-IgE were not permitted.</td>
</tr>
<tr>
<td>Duration of treatment: 24 weeks</td>
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</table>

Continuous

<table>
<thead>
<tr>
<th>Trough FEV1 (L, change)</th>
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</thead>
<tbody>
<tr>
<td>ACQ total</td>
</tr>
<tr>
<td>Trough PEF (L/min, change)</td>
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<tr>
<td>Trough FVC (L, change)</td>
</tr>
<tr>
<td>AQL-Q total</td>
</tr>
<tr>
<td>Peak FEV1 (L, change)</td>
</tr>
<tr>
<td>Peak FVC (L, change)</td>
</tr>
</tbody>
</table>

Dichotomous

| AEs (all) |
| SAFEs (all) |
| Exacerbations (OSCs) |
| Exacerbations (hospital) |
| ACQ responder |

Population:

- Male and Female, Middle Aged 45-64 years or Young Adult 19-24 years or Aged 65-79 years or Adult 19-44 years: Asthma;

Interventions:

1. [Pharmaceutical] Tiotropium Bromide 5.0 mg. 1.0 mg daily for 24.0 week AND [Pharmaceutical] Glucoctooid: for 24.0 week
2. [Pharmaceutical] Tiotropium Bromide 2.5 mg. 1.0 mg daily for 24.0 week AND [Pharmaceutical] Glucoctooid: for 24.0 week

Comparators:

[Pharmaceutical] Salmeterol 50.0 mg. 2.0 mg daily for 24.0 week AND [Pharmaceutical] Glucoctooid: for 24.0 week

Outcomes:

1. Quality of Life - AQLQ total
2. Physiological or clinical - Peak Expiratory Flow Rate; Trough PEF (L/min, change);
3. Physiological or clinical - Fev; Trough FEV1 (L, change); Peak FEV1 (L, change);
4. Physiological or clinical - Exacerbation Of Asthma; Exacerbations (hospital);
5. Physiological or clinical - ACQ responder;
6. Adverse events - Adverse Event; AEs (all); SAFEs (all);
Exploring PICO
Flexible search for combinations of Population, Intervention, Outcome
Exploring PICO
Flexible search for combinations of Population, Intervention, Outcome

<table>
<thead>
<tr>
<th>Population</th>
<th>Interventions</th>
<th>Comparison</th>
<th>Outcome</th>
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</thead>
<tbody>
<tr>
<td>Gestational Diabetes Mellitus</td>
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<tr>
<td>condition</td>
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<td>age</td>
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<tr>
<td>sex</td>
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</table>

### Diabetes Management Guidelines

<table>
<thead>
<tr>
<th>Population</th>
<th>Interventions</th>
<th>Comparisons</th>
<th>Outcomes</th>
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<tbody>
<tr>
<td>Female, Young Adult 19-24 years</td>
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<tr>
<td>Adult 18-44 years</td>
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<td>Adolescent 13-18 years</td>
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<tr>
<td>Gestational Diabetes Mellitus</td>
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<tr>
<td>Pregnant</td>
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<tr>
<td>Systolic, Blood Pressure</td>
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<tr>
<td>Hypertension</td>
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### WHO recommendations on antenatal care for a positive pregnancy experience

<table>
<thead>
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<tr>
<td>Pregnant</td>
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<tr>
<td>Lifestyle Education</td>
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<td>Management Of Gestational Diabetes Mellitus</td>
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<td>Combinations Of Oral Blood Glucose Lowering...</td>
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<td>Pregnancy Exercise Education</td>
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<td>Dietary Education For Gestational Diabetes</td>
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<tr>
<td>Pharmacological</td>
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### Management of diabetes: A national clinical guideline

<table>
<thead>
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<td></td>
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<tr>
<td>Adolescent 13-18 years</td>
<td></td>
<td></td>
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<tr>
<td>Gestational Diabetes Mellitus</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Pregnant</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Blood Glucose Monitoring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dietary Education For Gestational Diabetes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glipizide</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Screening, Diagnosis, and Management of Gestational Diabetes Mellitus

<table>
<thead>
<tr>
<th>Population</th>
<th>Interventions</th>
<th>Comparisons</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female, Young Adult 19-24 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult 18-44 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adolescent 13-18 years</td>
<td></td>
<td></td>
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<tr>
<td>Pregnant</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>metformin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>insulin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>screening</td>
<td></td>
<td></td>
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<tr>
<td>Educational</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacological</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
New Cochrane Review Ecosystem

Tools

1. Develop question
2. Plan methods
3. Write & publish protocol
4. Develop search
5. Run search
6. Select studies
7. Collect data
8. Assess risk of bias
9. Analyze data
10. Interpret findings
11. Write & publish review

Linked Data tools

Covidence
Rev Man Web
Evidence Pipeline
EPPI Reviewer
CRS-D
Archie
Linked data
PICO
Review database

Information specialists
Cochrane Crowd

Comms support
Editing support

GRADE Pro GDT
MAGIC app

Communities
Process
Applications
Data stores
RevMan Web Review Dashboard

Placebo interventions for all clinical conditions

Status
Stage: Full review
Availability: Not checked out
Editorial workflow: Review Update

Process
QUESTION
PROPOSE
DESIGN
EDIT
IMPLEMENT - FIND
IMPLEMENT - COLLECT
IMPLEMENT - ASSESS
IMPLEMENT - ORGANISE
IMPLEMENT - ANALYSE
IMPLEMENT - INTERPRET
REPORT

Authors
Name | Time | Last Activity | Role | #
--- | --- | --- | --- | ----
Asbjorn Hrobjartsson | Unknown | Nov 11, 2009 | CP+A | 1
Peters Gotzsche | Unknown | Unknown | A | 2
Frankie Achille | Unknown | Unknown | A | 3
Miranda Cumpston | 01:48 | Unknown | AS | 4
Zoe Rose | Unknown | Unknown | A | 5

History
Version | Checked In By | Date | Description
--- | --- | --- | ---
5.1 | Megan Pritor | Feb 11, 2014 | Review No ch...
5.0 | Megan Pritor | Nov 12, 20... | For publication
4.23 | Megan Pritor | Nov 12, 20... | FOR PUBLICA...
4.22 | Asbjorn Hrobj... | Nov 11, 20... | AH to check
4.21 | Megan Pritor | Nov 11, 20... | final
4.20 | Megan Pritor | Nov 11, 20... | final?
4.19 | Megan Pritor | Nov 10, 20... | changed date...
4.18 | Asbjorn Hrobj... | Nov 10, 20... | Final version, ...
### Placebo interventions for all clinical conditions

**1 Main analysis: clinical conditions investigated in three trials or more**

<table>
<thead>
<tr>
<th>Outcome or Subgroup</th>
<th>Studies</th>
<th>Participants</th>
<th>Statistical Method</th>
<th>Effect Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Binary outcomes</td>
<td>9</td>
<td></td>
<td>RR - M-H, Ran...</td>
<td>Subtotals only</td>
</tr>
<tr>
<td>1.2 Continuous outcomes</td>
<td>119</td>
<td></td>
<td>SMD - IV, Rand...</td>
<td>Subtotals only</td>
</tr>
</tbody>
</table>

- **1.2.1 Pain (VAS, ordinal scales, McGill score, ...** | 60 | 4154 | SMD - IV, Random, 95% | -0.28 [-0.36, -0.19] |
- **1.2.2 Insomnia (sleep onset latency in min, ...** | 6 | 164 | SMD - IV, Random, 95% | -0.19 [-0.50, 0.12] |
- **1.2.3 Hypertension (diastolic, mm Hg; abso...** | 10 | 308 | SMD - IV, Random, 95% | -0.17 [-0.46, 0.12] |
- **1.2.4 Nausea (VAS, Rhodes Inventory of Na...** | 7 | 452 | SMD - IV, Random, 95% | -0.25 [-0.46, -0.04] |
- **1.2.5 Smoking (cigarettes per day, self repo...** | 3 | 703 | SMD - IV, Random, 95% | -0.53 [-1.29, 0.23] |
- **1.2.6 Phobia (fear of snakes and spiders; sn...** | 3 | 57 | SMD - IV, Random, 95% | -0.63 [-1.17, -0.06] |

**2 Main analysis: overall pooled analyses**

**3 Main analysis: patient-reported or observer-reported outcomes**

**4 Supplementary analysis: adverse effects**

**5 Effect modification subgroup analysis: type of outcomes**

**6 Effect modification subgroup analysis: the purpose of the trials**
Accelerate your systematic review

See our plans

Covidience is a core component of Cochrane’s
Integration with RevMan

You can import results of statistical analyses from Cochrane Collaboration's Review Manager and export a summary of findings table into the RevMan file. RevMan is the software used for preparing and maintaining Cochrane Reviews. The GDT supports import and export to RevMan 5 format, with more seamless integration on the way.
...breathe....
Connecting tools in the Ecosystem
Example: MAGIC and Cochrane PICOfinder
Improving patient care through guidelines, evidence summaries and decision aids that we can all trust, use and share.

A non-profit authoring and publication platform helping you put best current evidence into practice.

Recently published public guidelines

- **Adjunctive corticosteroid therapy for adults hospitalized with community-acquired pneumonia**
  - Reed Siemieniuk - WikiRecs Group

- **Røtningslinjer for antitrombotisk behandling og profylaksø**
  - Per Olav Vandvik - Norsk Selskap for Trombose og Hemostase

- **Behandlingsretningslinjer for håndleddsbrudd hos voksne**
November update for Organizations and admins.

We currently have over 23,000 users and 125 organisations signed up on our platform.

- **23,400** Users
- **34** active Organisations
- **81** Public guidelines

New features planned to be released within the next week

**New Organization- specific guideline pages**
All organizations now get their own branded page where all their public content are listed. The pages has a direct

**Organizations can customize guideline colours**
All organizations can now theme their guidelines and Organization specific pages to better match their own brand-
Brief MAGIC “demo” & live robot demo
### Add PICO

**Population**
- **People with dementia**
  - ICD-10: Dementia in Alzheimer's disease (F00)
  - SNOMED-CT: Dementia (52448006)
  - MeSH: Dementia (D003704)

**Intervention**
- **Memantin**
  - MeSH: Memantine (D008559)
  - ATC: Memantin (N06D X01)

**Comparator**
- **No extra treatment, usual care except memantin**
  - MeSH: Placebos (D010919)

**Short names**
- **People with dementia**: Dementia
- **Memantin**: Memantin
- **Placebos**: Placebos

**Buttons**
- Save
- Cancel

- **Under development**

---

*Notes:*
- Short names are used for the table and mobile to keep layout less cluttered.
- Codes are used for user search, finding Systematic reviews and for decision support.
A proper literature search should be systematic and thorough. However, sometimes somebody else have done that job for you, in a recently published systematic review or guideline that answer the same questions as yours. Here are some search services to help you start your literature search. Below you find an initial search based on your free text PICO and added PICO codes. Adjust, or go directly to resources to improve it.

### Find Studies and Systematic Reviews

**CD003154 (v14) Memantine for dementia**  
Last search 24-10-2013 Published 25-04-2015

<table>
<thead>
<tr>
<th>Population</th>
<th>MeSH</th>
<th>Dementia in Alzheimer’s disease</th>
<th>F00</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SNOMED-CT</td>
<td>Dementia</td>
<td>52448006</td>
<td>X</td>
</tr>
<tr>
<td>Comparator</td>
<td>MeSH</td>
<td>Memantine</td>
<td>D008559</td>
<td>X</td>
</tr>
<tr>
<td>Comparator</td>
<td>ATC</td>
<td>Memantin</td>
<td>N06D X01</td>
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<td>Placebos</td>
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Search..

**Dementia**

**Pharmacological**

**Memantine**

**CD003154 Comparison:** Memantine vs placebo for dementia (cause not specified) (4-6 weeks)
Outcome: Number of dropouts
- Dementia
- Ages 65 to 80 years and over
- Male and Female
- Memantine
- Memantine
- Number of drop-outs

**CD003154 Comparison:** Memantine vs placebo for moderate-to-severe Alzheimer's disease, 6 month studies. ITT-LOCF data.
Outcome: Clinical Global CIBIC-
- Dementia Due To Alzheimer's Disease
- Ages 65 to 80 years and over
- Male and Female
- Memantine
- Memantine
- Clinical Global CIBIC-

**CD003154 Comparison:** Memantine vs placebo for moderate-to-severe Alzheimer's disease, 6 month studies. ITT-LOCF data.
Outcome: Number suffering agitation as an adverse event

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Memantine vs placebo for moderate-to-severe Alzheimer's disease, 6 month studies. ITT-LOCF data.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome</strong></td>
<td><strong>Stations</strong></td>
</tr>
<tr>
<td>L7. Number suffering agitation as an adverse event</td>
<td>2</td>
</tr>
</tbody>
</table>
Dissemination using the Ecosystem
Example: Dentistry guideline
Evidence-based clinical recommendations regarding screening for oral squamous cell carcinomas

Michael P. Rathman, DDS, MS; William Carpenter, DDS, MS; Ezra E. Cohen, MD; Joel Epstein, DDS, MD; Howard R. Fine, DDS; David R. Hulse, DDS, MS; William J. Kelly, DDS; Frank J. Graham, DDS; Philippe P. Nogués, MD, PhD; John R. Krbavan, DDS, PhD; Wayne M. Koch, MD; Paul M. Lambert, DDS; Mark W. Lingoes, DDS, PhD; Bert W. Oettmeier Jr., DDS; Laura L. Patton, DDS; David Perkins, DDS; Britt C. Reid, DDS, PhD; James J. Sicard, DDS, PhD; Scott L. Tomar, DDS, DMD; Alfred D. Wyatt Jr., DDS; Krishna Aravamudhan, BDS, MS; Julie Franture-Hawley, RDH, PhD; Jennifer L. Gleason, DDS, MPH; Daniel M. Meyer, DDS; for the American Dental Association Council on Scientific Affairs Expert Panel on Screening for Oral Squamous Cell Carcinomas

ABSTRACT
Background. This article presents evidence-based clinical recommendations developed by a panel convened by the American Dental Association Council on Scientific Affairs. This report addresses the potential benefits and potential risks of screening for oral squamous cell carcinomas and the use of adjunctive screening aids to visualize and detect potentially malignant and malignant oral lesions.

Types of Studies Reviewed. The panel members conducted a systematic search of MEDLINE, identifying 332 systematic reviews and 1,649 recent clinical studies. They selected five systematic reviews and four clinical studies to use as a basis for developing recommendations.

Results. The panel concluded that screening by means of visual and tactile examination to detect potentially malignant and malignant lesions may result in detection of oral cancers at early stages of development, but that there is insufficient evidence to determine if screening alters disease-specific mortality in asymptomatic people seeking dental care.

Clinical Implications. The panel suggested that clinicians remain alert for signs of potentially malignant lesions or early-stage cancers while performing routine visual and tactile examinations in all patients, but particularly in those who use tobacco or who consume alcohol heavily. Additional research regarding oral cancer screening and the use of adjuvants is needed.

Key Words. American Dental Association (ADA); biopsy; brush; cancer; carcinoma; oral; evidence-based dentistry; mouth neoplasms; oral cancer; practice guidelines.

JADA 2010;111:5;509-520.

Diagnostic tests for oral cancer and potentially malignant disorders in patients presenting with clinically evident lesions (Review)

Macey R, Walsh T, Brocklehurst P, Kerr AR, Liu JLY, Lingen MW, Ogden GR, Warnakulasuriya S, Scully C

Clinical assessment to screen for the detection of oral cavity cancer and potentially malignant disorders in apparently healthy adults (Review)

Alpha testing the ecosystem in dentistry

Early detection OC (2010)

PICO

GRADE

Update

Recommendations

3 months!!!

2013

2015
### Lessons after the experience

1. Reduction in time from two years to three months

2. Reduction in resources

3. Additional guidance on the analysis

4. Provided a framework to summarize the evidence

---

1. Need to update the searches

2. Context dependence of the review and the guideline

3. The panel needed specific comparisons (reorganization of the data)

4. Many methodological decisions needed to be reviewed by the ADA team
Challenges of operating in the ecosystem

1. Poor quality of clinical practice guidelines and SRs
2. Lack of channels to share data
3. Lack of communication across institutions
4. Methodologies not standardized
5. Lack of a common platform/software
6. Poor understanding of shared decision-making
Challenges of operating in the ecosystem

1. Lack of implementation of decision support systems in the EDR
2. How to measure compliance with recommendations and outcomes
3. Lack of a common and digital platforms to share data
4. Lack of connection between “real-data in clinical practice” and basic research
Closing the loop in the ecosystem

Example: RapidRecs
Digital and Trustworthy Evidence Ecosystem
From RapidRecs pilot to closing the loop in Finland and Belgium

23 trials
n=4000

Offer probiotics

Baseline: 3 of 100 offered probiotics
To practice: 17-month old "Stella" with pneumonia is prescribed antibiotics in Belgian primary care.
Doctor prescribes antibiotics in the EHR....
Drilling back to the Evidence if needed

Recommendation - evidence summary - all the way to the meta-analysis?

2 Probiotics for children receiving antibiotics for an infection

Children 1 month to 2 years old receiving antibiotics for an infection.

Strong recommendation

Benefits clearly outweigh the drawbacks/harms.

We recommend adjunctive probiotics rather than no probiotics.

<table>
<thead>
<tr>
<th>Population</th>
<th>Intervention</th>
<th>Comparator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children 1 month to 2 years old</td>
<td>Adjunctive probiotic therapy</td>
<td>No probiotic therapy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcome Timeframe</th>
<th>Study results and measurements</th>
<th>Absolute effect estimates</th>
<th>Certainty in effect estimates</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAD &lt;2 years</td>
<td>Relative risk 0.48 (CI 0.35 - 0.61) Based on data from 3898 patients in 22 studies Follow up: 1-12 weeks.</td>
<td><strong>180</strong> per 1000</td>
<td><strong>83</strong> per 1000</td>
<td>Moderate Due to serious inconsistency.</td>
</tr>
</tbody>
</table>
Acting on – and implementing - the evidence together
And the same goes for Finland...

**Automatic reminder triggered in a Finnish medical record:**

The patient got a prescription of antibiotics (Amoxin). Probiotics (Lactobacillus or Saccharomyces boulardi) are recommended for the prevention of antibiotic diarrhea. In immunosuppressed patients their safety has not been confirmed.
The “Digital and Trustworthy Evidence Ecosystem” is emerging:

- New and improved methods and tools are available
- Digitally structured, linked data with sharing across platforms and organizations is now possible
- People and process need to evolve to leverage the new “Ecosystem” including:
  - Promote a culture of sharing
  - Adapt to standards and structuring of data
  - Common understanding of research methods
  - Incorporation of evidence from “diverse” sources
The Intelligence is in the Connections

Connections between Information

Connections between people

Credit: Nova Spivack
Cochrane Deutschland Stiftung nun offiziell

Am 26. Oktober 2017 wurde die unabhängige und gemeinnützige Cochrane Deutschland Stiftung (CDS) mit Sitz in Freiburg offiziell gegründet. Die Stiftung wird ab sofort vom Bundesministerium für Gesundheit mit bis zu einer Million Euro pro Jahr gefördert, um die Aktivitäten von Cochrane in Deutschland dauerhaft realisieren zu können.

Am 9. November äußerte sich der Bundesgesundheitsminister Hermann Gröhe in einer offiziellen Erklärung wie folgt:

"Wir brauchen unabhängige Forschung, die den Stand der Erkenntnisse immer wieder wissenschaftlich auf den Prüfstand stellt und uns so verlässliche Informationen über die besten Behandlungsmethoden liefert. Deshalb habe ich mich dafür eingesetzt, dass der Bund die Arbeit von Cochrane in Deutschland mit der Cochrane Deutschland Stiftung endlich nachhaltig fördern kann."

Damit endet eine zwanzigjährige Phase der projektbasierten Finanzierung von Cochrane in Deutschland. Die Stiftung kann sich nun angesichts stabiler Finanzierung und planbarer Ressourcen satzungsgemäß nachhaltig für die Generierung und Implementierung von Wissen aus Cochrane Evidenz für alle relevanten Nutzergruppen einsetzen, Erklärungen zu gesundheitlichen Erkrankungen und Bevölkerungsgruppen zu fördern.
Thank you